FORM PTO-1390 (Modified) (REV 11-2000) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	U.S APPLICATION NO (IF KNOWN, SEE 37 CFR
TRG-299	10/030519

INTERNATIONAL APPLICATION NO	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/AT00/00098	19 April 2000	29 April 1999

TITLE OF INVENTION
MEDICAL ELECTRODE

APPLICANT(S) FOR DO/EO/US
LANG, Burrhus
LANG, Sergius

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☐ is attached hereto (required only if not communicated by the International Bureau).
   b. ☒ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☒ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S C. 371 (c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau
   c. ☐ have not been made, however, the time limit for making such amendments has NOT expired.
   d ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409)
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98
14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter 2 and 35 U.S.C. 1 821 - 1.825.
20. ☒ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☒ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Verification of English Translation, 3 Sheets of formal drawings, Form PCT/IB/301, Form PCT/IB/304, Form PCT/IB/308, and PCT Request Form PCT/RO/101.

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO	ATTORNEY'S DOCKET NUMBER
10/030519	PCT/AT00/00098	TRG-299

24. The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
☐	Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **$1040.00**	
☒	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **$890.00**	
☐	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$740.00**	
☐	International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$710.00**	
☐	International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **$100.00**	
	ENTER APPROPRIATE BASIC FEE AMOUNT =	**$890.00**
	Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	**$0.00**

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	17 - 20 =	0	x $18.00	**$0.00**	
Independent claims	1 - 3 =	0	x $84.00	**$0.00**	
Multiple Dependent Claims **(check if applicable)**.			☐	**$0.00**	
	TOTAL OF ABOVE CALCULATIONS =			**$890.00**	
☒	Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.			**$445.00**	
	SUBTOTAL =			**$445.00**	
	Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +			**$0.00**	
	TOTAL NATIONAL FEE =			**$445.00**	
	Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).** ☒			**$40.00**	
	TOTAL FEES ENCLOSED =			**$485.00**	
				Amount to be: refunded	$
				charged	$

a. ☒ A check in the amount of **$485.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **12-2147** A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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NAME

25, 059
REGISTRATION NUMBER

OCTOBER 29, 2001
DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
LANG et al.

Atty. Docket No. TRG-299

Title: Medical Electrode

Serial No.: PCT/AT00/00098

Art Unit: N/A

Filed: October 29, 2001

Examiner: N/A

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination of the captioned application and prior to calculation of the fees, please preliminarily amend the application as follows pursuant to 37 CFR § 1.115:

In the specification:

At page 1, in the center of line 4, please insert the heading "BACKGROUND OF THE INVENTION".

At page 2 in the center of the page between lines 4 and 5, please insert the heading "SUMMARY OF THE INVENTION".

At page 4, in the center of the top of the page before line 1, please insert the heading "BRIEF DESCRIPTION OF THE DRAWING".

At page 4, in the center of the page between lines 10 and 11, please insert the heading "DETAILED DESCRIPTION OF THE INVENTION".

In the Claims:

Please delete claims 1 to 15 and add the following claims:

16. A medical electrode comprising at least one electrically contactable conductor surface provided with a connecting element, characterized in that there is at least one uncontacted conductor surface which is arranged at a spacing and electrically separated from the at least one electrically contactable conductor surface.

17. The medical electrode as set forth in claim 16 characterized in that the connecting element is a tab.

18. The medical electrode as set forth in claim 16 characterized in that the uncontacted conductor surface is free from connecting elements.

19. The medical electrode as set forth in claim 16 characterized in that the at least one electrically contactable conductor surface and the uncontacted conductor surface are arranged on a common carrier.

20. The medical electrode as set forth in claim 16 characterized in that an uncontacted conductor surface at least partially surrounds one or more contacted conductor surfaces or extends along same.

21. The medical electrode as set forth in claim 16 characterized in that the uncontacted conductor surface is shaped as a circular ring.

22. The medical electrode as set forth in claim 16 characterized in that an uncontacted conductor surface extends into the intermediate space between two spaced contacted conductor surfaces or into a recess configuration in a conductor surface.

23. The medical electrode as set forth in claim 16 characterized in that there are provided two uncontacted conductor portions which are curved parallel.

24. The medical electrode as set forth in claim 16 characterized in that there are provided at least two electrically separated contactable conductor surfaces, wherein one of said conductor surfaces at least partially surrounds another of said conductor surfaces, as viewed in plan.

25. The medical electrode as set forth in claim 24 characterized in that an inner conductor surface is surrounded by an outer conductor surface which extends around the inner conductor surface at a constant gap spacing relative to the outer edge thereof.

26. The medical electrode as set forth in claim 24 characterized in that an inner conductor surface is of a substantially round circular configuration and is surrounded by an outer conductor surface in the form of a circular ring.

27. The medical electrode as set forth in claim 24 characterized in that the outer conductor surface surrounds the inner over an angular range of more than 270°.

28. The medical electrode as set forth in claim 24 characterized in that at least one inner conductor surface and an outer conductor surface surrounding same each have a respective projecting connecting element for an electrode cable, wherein the connecting elements are arranged laterally one beside the other and parallel to each other.

29. The medical electrode as set forth in claim 24 characterized in that there are provided two electrically contactable conductor surfaces in different radial positions, the surface areas and peripheral lengths thereof being substantially equal.

30. The medical electrode as set forth in claim 24 characterized in that at least one conductor surface is of a hook-shaped configuration, the hook surrounding the other conductor surface.

31. The medical electrode as set forth in claim 24 characterized in that each conductor surface has hook-shaped projections which are interleaved one into the other.

32. The medical electrode as set forth in claim 16 characterized in that the outside contour of the conductor surface or surfaces is round.

REMARKS

By this Preliminary Amendment, Applicants have added titles to each section of the present application pursuant to 37 CFR § 1.77. Additionally, Applicants have deleted claims 1-15 and added new claims 16-32; thus claims 16-32 are now pending in the application.

FEE STATEMENT

A fee of $485.00 is submitted herewith. It is believed that no additional fees are currently due. However, in the event of any fee deficiency or overpayment, authorization is hereby granted to charge such deficiency or credit such overpayment to deposit account #12-2147.

Respectfully Submitted
LORUSSO & LOUD

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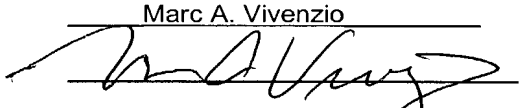
CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10)

I hereby certify that this Preliminary Amendment, along with any attachments referred to therein, is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: Assistant Commissioner for Patents, Box PCT, Washington D.C. 20231 on October 29, 2001.

Marc A. Vivenzio



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Medical electrode

The invention concerns a medical electrode, in particular for energy transmission, comprising at least one electrically contactable conductor surface preferably provided with a connecting bar or the like.

Such electrodes are applied to the skin of the patient for the most widely varying purposes, for example in order to monitor bioelectrical processes of the body or to introduce into or take from the body currents - which are mostly of relatively high frequency - (for example neutral electrodes, stimulation electrodes and defibrillation electrodes). The structure of those electrodes can be of various different kinds, in general such electrodes have a rearward carrier remote from the skin and comprising a foam material. Provided on the carrier, possibly with the interposition of intermediate layers, are electrically conductive conductor surfaces, for example an aluminum laminate. It is however also possible to provide non-metallic conductor surfaces. In the case of neutral electrodes, they are not directly in contact with the skin, to avoid the occurrence of high local current densities. On the contrary, there is provided an adhesive gel which is electrically conductive for the alternating currents used and which makes the contact with the skin.

In the case of neutral electrodes for taking current from an area of operation it is already known for those electrodes to be equipped with at least two electrically separate conductor surfaces, wherein an electronic evaluation device individually monitors the currents taken from the respective conductor surfaces and gives an alarm in the event of an excessive difference being detected. The purpose of that procedure is to ensure that both conductor surfaces of the neutral electrode afford good electrical contact with the skin in order to exclude local heat-generation phenomena at the skin of the patient. In the case of the known neutral electrode, there are for example two substantially rectangular conductor surfaces which are arranged on a common carrier in mutually juxtaposed

relationship with a gap between them. So that this neutral electrode together with the monitoring device connected thereto is operable, the gap must be precisely oriented with respect to the area of operation as otherwise the two conductor surfaces are supplied differently with current.

In order to improve the apportioning of current, in particular in the case of neutral electrodes for taking off current, and to make such apportioning more uniform, it is provided in accordance with the invention that there is at least one uncontacted conductor surface which is arranged at a spacing and electrically separated from the at least one electrically contactable conductor surface.

The uncontacted conductor surface which is free from connecting bars can for example surround the contacted conductor surface in the form of a circular ring. It is also possible to provide two or more such uncontacted conductor surfaces on a common carrier with the contactable conductor surface or surfaces. It is also possible for the uncontacted conductor surface to extend into the intermediate space between two spaced contacted conductor surfaces.

As already mentioned the aim of those uncontacted conductor surfaces is to improve current apportionment, in particular in the case of neutral electrodes which take off current, and to make it more uniform. Particularly in the case of such neutral electrodes which preferably have two or more electrically contactable conductor surfaces, an additional non-contacted conductor surface ring can result in uniform apportionment of the current to be taken off, to the two electrode portions (conductor surfaces). That therefore overall affords better current density distribution and thus a lower level of thermal loading for the patient.

In order to provide a medical electrode having at least two electrically separated conductor surfaces which permit uniform detection of biopotentials or energy transmission, a preferred embodiment provides that one conductor surface at least partially surrounds another conductor surface, as viewed in plan.

The inner conductor surface is preferably of a round circular configuration and the outer conductor surface surrounds that inner

conductor surface in the form of a circular ring. The gap between the two electrically separated conductor surfaces then extends in the form of an annular gap between the inner and the outer conductor surfaces. In accordance with an embodiment, by suitable dimensioning and configuration thereof, it is possible for the surface areas and/or peripheral lengths of the two conductor surfaces which are however different in configuration to be nonetheless substantially equal, in particular in order to provide substantially identical conditions in terms of taking off current in the case of the neutral electrode and to ensure a high level of orientational tolerance.

A substantial advantage of such a preferred electrode configuration provides that, apart from a compact structural shape, it can be stuck on the skin in many different orientations without having to accept a substantial variation in current conductivity (high orientational tolerance, that is to say flexile orientability for example in relation to an area of operation). In that respect it is particularly desirable if the outer conductor surface surrounds the inner over an angular range of over 90°, preferably over 270°. While in the previous neutral electrode in accordance with the state of the art, the gap always had to be oriented accurately with respect to the area of operation, the medical staff can now stick the novel electrode on the skin in virtually any orientation. That makes use considerably easier.

In spite of the fact that the conductor surfaces surround each other with their active regions, it is desirable for the connecting lugs to be taken out laterally in parallel mutually juxtaposed relationship in order to permit simple connection of the multi-pole electrode cable.

A further embodiment of the invention is based on the realisation that higher local current densities can occur at the corners of the conductive regions. In order to avoid that this embodiment of the invention provides that the conductive regions are of a substantially round configuration, preferably being of a round circular configuration. In that way it is possible to avoid the disadvantageous corners and in addition to ensure insensitivity in relation to different orientations when applying the electrode.

Further advantages and details of the invention are described in greater detail with reference to the specific description hereinafter.

Figure 1 diagrammatically shows the arrangement of two electrically separate conductor surfaces in an electrode, wherein the carrier, for example a sticky foam support, is shown in broken line.

Figures 2 through 11 further arrangements of conductor surfaces for an electrode, in particular a neutral electrode, wherein carrier materials or possible skin-side, electrically conducting, sticky gels are not shown for the sake of simplicity. In this respect Figures 4, 6, 7, 8, 9, 10 and 11 show the uncontacted conductor surface according to the invention.

The medical skin electrode shown in Figure 1 has on a carrier 2 two electrically separate conductor surfaces 1a and 1b provided with connecting bars 3. The outer conductor surface 1b surrounds the inner conductor surface 1a, as can be seen in a plan view as shown in Figure 1. The inner conductor surface 1a is of a substantially round circular configuration and the outer conductor surface 1b is substantially in the form of a circular ring, with a gap 4 of constant width being arranged therebetween. It is particularly appropriate if the outer conductor surface 1b surrounds the inner conductor surface over an angular range which is as large as possible. That should be at least 90°, preferably over 270°. With such an arrangement it is possible for the electrode to be disposed in virtually any orientation with respect to the area of operation while nonetheless always achieving reliable current take-off which is distributed uniformly to the two surface portions 1a and 1b. When connecting a monitoring apparatus which forms part of the state of the art and which measures the relative currents from the two conductor surfaces 1a and 1b, the situation therefore does not involve an unwanted alarm being triggered off when the electrode is stuck on the skin in virtually any orientation relative to the area of operation. The electrode can thus be applied quickly and in an uncomplicated fashion by the medical specialist staff.

In order to provide conditions which as far as possible are identical for current take-off (in general terms: energy transmission) for the two

conductor surfaces 1a and 1b the surface areas of the two surfaces 1a and 1b are here selected to be equal.

In the case of the electrode shown in Figure 2 the inner conductor surface 1d has a multiply curved outside edge in order to increase the peripheral length thereof so that it substantially corresponds to the peripheral length of the outer hook-shaped or circular ring-shaped conductor surface element 1b.

Figure 3 shows a 'double hook geometry' in which the conductor surfaces 1a and 1b have hook-shaped projections which are interleaved one into the other in order to achieve uniform current distribution to the two half-electrodes.

The electrode shown in Figure 4 also has two electrically contacted conductor surfaces 1a and 1b which are interleaved one into the other or which at least partially surround each other. In accordance with the invention this electrode also has two uncontacted rings 4 and 5 which, in contrast to the conductor surfaces 1a and 1b, do not have any connecting elements 3 for an electrode cable. The outer uncontacted ring encloses all inner conductor surfaces while the inner uncontacted ring additionally also extends into the gap between the two contacted conductor surfaces 1a and 1b (the actual active electrode surfaces). The purpose of such uncontacted conductor surfaces or rings 4 and 5 of that kind is to achieve uniform current apportionment. Tests on a patient with neutral electrodes have shown that the use of such uncontacted rings involves a substantially lower level of thermal loading by virtue of improved current density distribution.

Desirably those uncontacted rings and the contacted conductor surfaces 1a and 1b will be arranged on a carrier (not shown in Figure 4), for example of foam, and, if this is desired, covered with an electrically conducting gel at the skin side. In principle however it is also possible for the uncontacted, electrically conducting rings or the contactable conductor surfaces 1a and 1b to be applied independently of each other to the patient in the form of separate components.

In order to avoid corners being present on rectangular electrode elements, the shape of the conductor surfaces is desirably so selected that

they are of a round, preferably round circular external contour (with the exception of the connecting bars 3). Such an embodiment is diagrammatically shown in Figure 5 where the two conductor surfaces 6a and 6b are of a clearly evident round circular outside contour 7. It will be appreciated that such a simple, round, double-surface double electrode may also be surrounded by an additional uncontacted ring 4 which at least partially encloses the outside contour. In that way once again the rise in temperature of the electrode with the flow of current in the course of medical use can be kept particularly low and uniform. In the embodiment illustrated in Figure 7 there is also a further ring 4' disposed outside the uncontacted ring 4, that is to say a total of two uncontacted rings which result in the current flow in use being rendered still more uniform. It is also possible for the uncontacted conductor surface 4 to have an extension 4a which extends into the region between the two electrically contacted conductor surfaces.

The idea of a medical electrode with an electrically uncontacted, preferably annular conductor surface 4 or 5 respectively can also be embodied in electrodes with only one electrically contacted conductor surface 6, as is shown in Figures 9, 10 and 11. In regard to Figure 11 it should also be mentioned that here the current-carrying contacted electrode 6 is of a substantially hook-shaped configuration, wherein the contact-less outer ring 4 extends inwardly with an extension 4'a and thus also covers the inside of the hook electrode.

CLAIMS

1. A medical electrode comprising at least one electrically contactable conductor surface preferably provided with a connecting bar or the like, characterised in that there is at least one uncontacted conductor surface (4, 5) which is arranged at a spacing and electrically separated from the at least one electrically contactable conductor surface (1a, 1b).

2. A medical electrode as set forth in claim 1 characterised in that the uncontacted conductor surface (4, 5) is free from connecting bars (3) or the like.

3. A medical electrode as set forth in claim 1 or claim 2 characterised in that the at least one electrically contactable conductor surface (1a, 1b) and the uncontacted conductor surface (4, 5) are arranged on a common carrier (2).

4. A medical electrode as set forth in one of claims 1 through 3 characterised in that an uncontacted conductor surface (4, 5) at least partially surrounds one or more contacted conductor surfaces (1a, 1b) - preferably in the form of a circular ring - or extends along same.

5. A medical electrode as set forth in one of claims 1 through 4 characterised in that an uncontacted conductor surface extends into the intermediate space between two spaced contacted conductor surfaces (1a, 1b) or into a recess configuration in a conductor surface.

6. A medical electrode as set forth in one of claims 1 through 5 characterised in that there are provided two uncontacted conductor portions (4, 5) which are curved parallel at least in a portion-wise manner.

7. A medical electrode as set forth in one of claims 1 through 6 characterised in that there are provided at least two electrically separated

contactable conductor surfaces, wherein one of said conductor surfaces (1b) at least partially surrounds another of said conductor surfaces (1a), as viewed in plan.

8. A medical electrode as set forth in claim 7 characterised in that an inner conductor surface (1a) is surrounded by an outer conductor surface (1b) which preferably extends around the inner conductor surface (1a) at a constant gap spacing relative to the outer edge thereof.

9. A medical electrode as set forth in claim 7 or claim 8 characterised in that an inner conductor surface (1a) is of a substantially round circular configuration and is surrounded by an outer conductor surface in the form of a circular ring.

10. A medical electrode as set forth in one of claims 7 through 9 characterised in that the outer conductor surface (1b) surrounds the inner (1a) over an angular range of over 90°, preferably over 270°.

11. A medical electrode as set forth in one of claims 7 through 10 characterised in that at least one inner conductor surface (1a) and an outer conductor surface (1b) surrounding same each have a respective projecting connecting bar (3) or the like for an electrode cable, wherein the connecting bars (3) are preferably arranged laterally one beside the other and parallel to each other.

12. A medical electrode as set forth in one of claims 7 through 11 characterised in that there are provided two electrically contactable conductor surfaces (1a, 1b) in different radial positions, the surface areas and/or peripheral lengths thereof being substantially equal.

13. A medical electrode as set forth in one of claims 7 through 12 characterised in that at least one conductor surface (1b) is of a hook-

shaped configuration, the hook (1b) surrounding the other conductor surface (1a).

14. A medical electrode as set forth in one of claims 7 through 13 characterised in that each conductor surface (1a, 1b) has preferably hook-shaped projections which are interleaved one into the other (Figure 3).

15. A medical electrode as set forth in one of claims 1 through 14 characterised in that the outside contour of the conductor surface or surfaces (6, 6a, 6b) is round.

PCT

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Internationales Büro

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(81) Bestimmungsstaaten: CN, JP, US, europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Veröffentlicht
Mit internationalem Recherchenbericht.

(54) Title: MEDICAL ELECTRODE

(54) Bezeichnung: MEDIZINISCHE ELEKTRODE

(57) Abstract

The invention relates to a medical electrode with at least two conductor surfaces that are electrically separated from each other. A conductor surface (1b) surrounds the other conductor surface (1a) at least partially when seen from above.

(57) Zusammenfassung

Medizinische Elektrode mit mindestens zwei elektrisch getrennten Leiterflächen, wobei eine Leiterfläche (1b) eine andere Leiterfläche (1a) – in einer Draufsicht gesehen – zumindest teilweise umgibt.

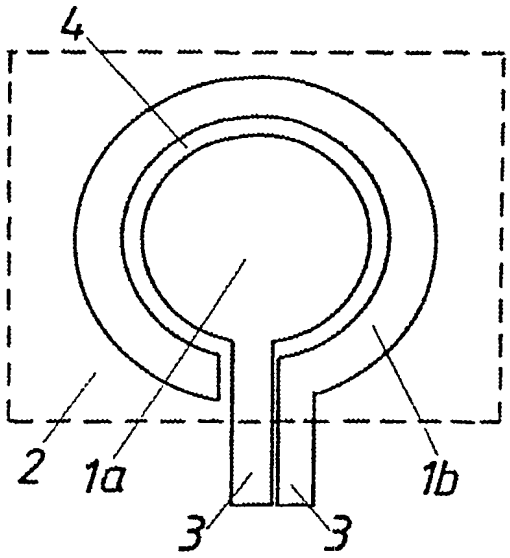


Fig 1

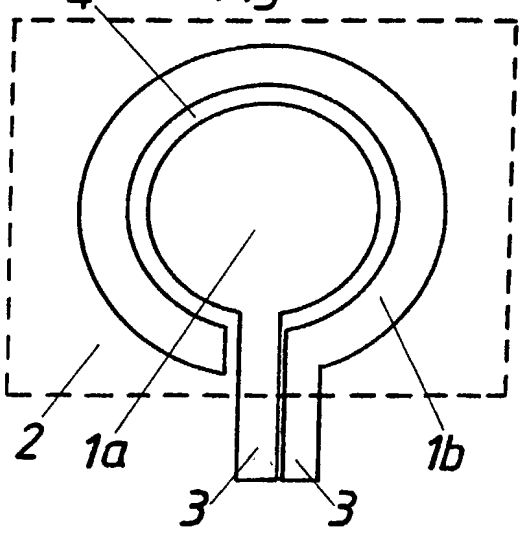


Fig. 2

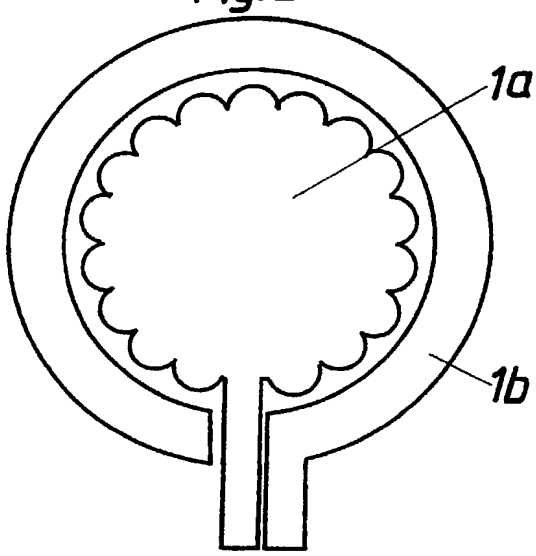


Fig. 3

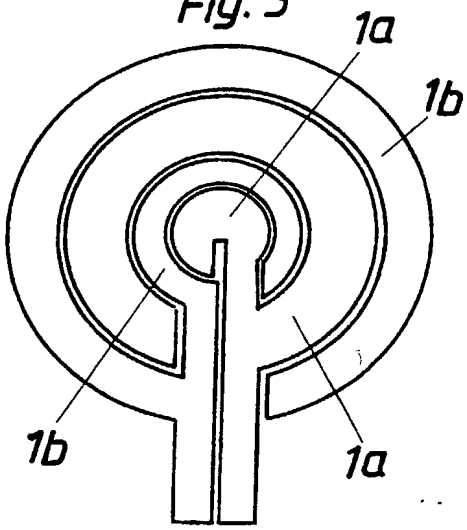


Fig. 4

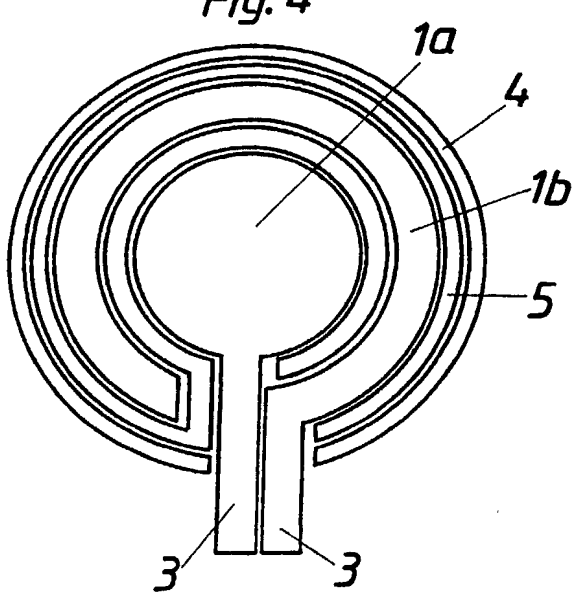


Fig. 5

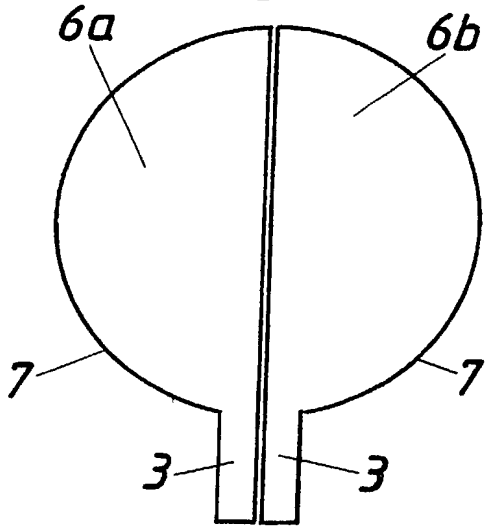


Fig. 6

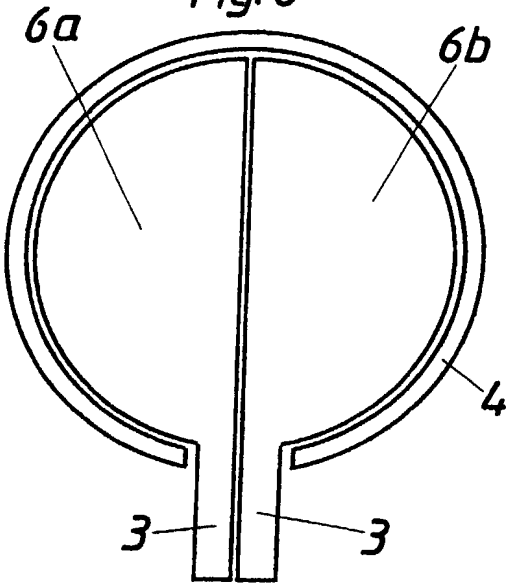


Fig. 7

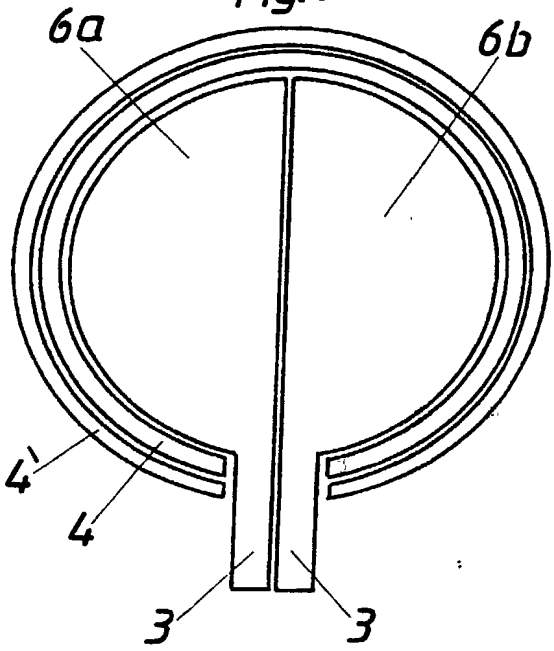


Fig. 8

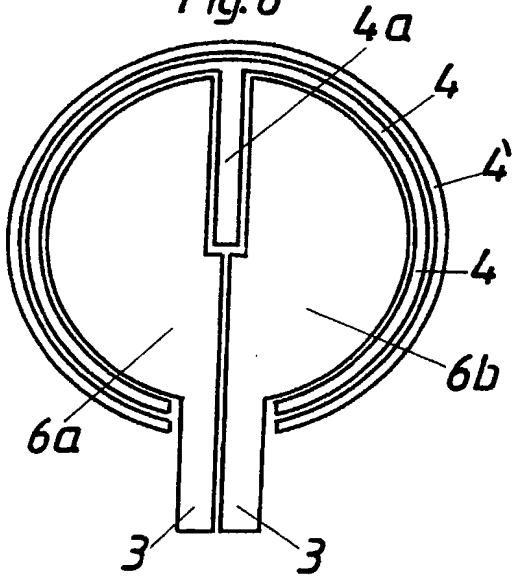


Fig. 9

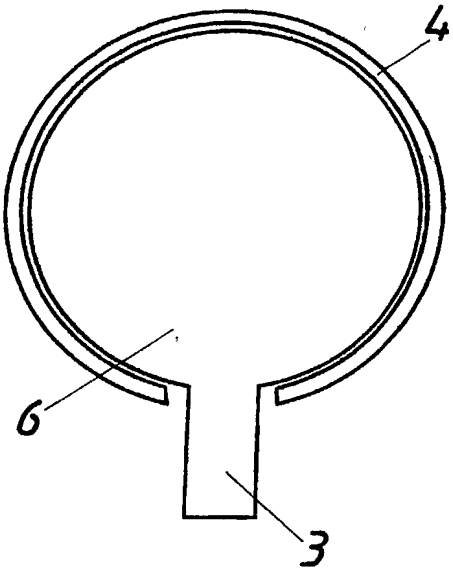


Fig. 10

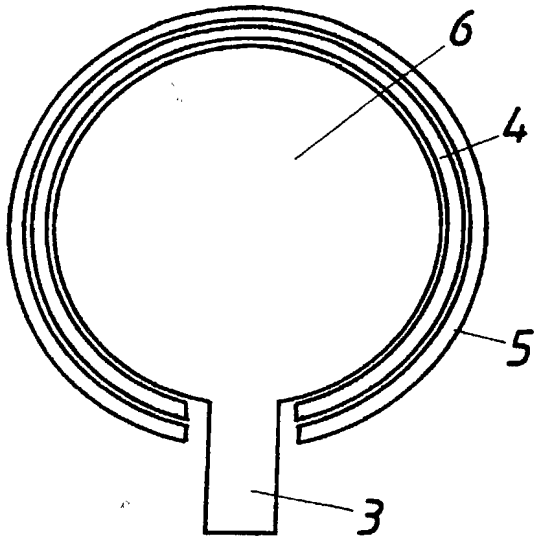
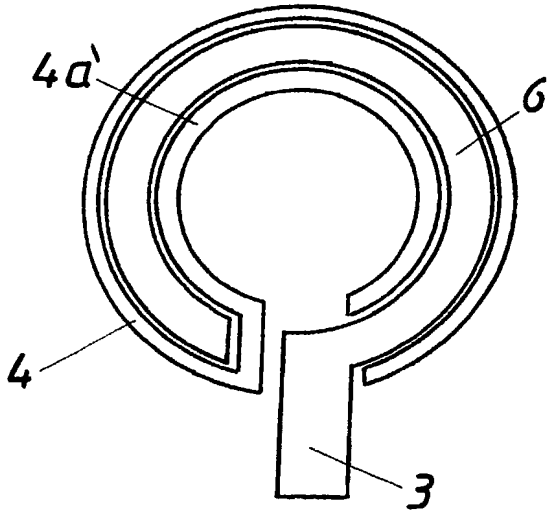


Fig. 11



Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that.

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Medizinische Elektrode

Medical Electrode

deren Beschreibung

(zutreffendes ankreuzen)

hier beigefügt ist.

☒ am 04/19/2000 unter der

Anmeldungsseriennummer PCT/AT00/00098

eingereicht wurde und am _____ abgeändert wurde (falls tatsächlich abgeändert).

the specification of which

(check one)

is attached hereto.

☒ was filed on 04/19/2000 as

Application Serial No. PCT/AT00/00098

and was amended on _____ (if applicable).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1 56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a)

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Form PTO-FB-240 (8-83) Patent and Trademark Office-U.S. DEPARTMENT OF COMMERCE

German Language Declaration

Prior foreign applications
Prioritat beansprucht

(Number) (Nummer)	(Country) (Land)	(Day/Month/Year Filed) (Tag/Monat/Jahr eingereicht)	Priority Claimed Yes Ja	No Nein
A 769/99	Austria	29 April 1999	☒	☐
			☐	☐
			☐	☐

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 112 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1 56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1 56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgegeben)	(Status) (patented, pending, abandoned)
0			
0			

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

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German Language Declaration

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

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Mark D. Lorusso	41,955
Jeffrey D. Washville	46,366

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Unterschrift des Erfinders: Burrhus LANG Datum: Oct. 5th 2001	Inventor's signature: Burrhus LANG Date: Oct. 5th 2001
Wohnsitz: Innsbruck, Österreich ATV	Residence: Innsbruck, Austria
Staatsangehörigkeit: Österreich	Citizenship: Austria
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Voller Name des zweiten Miterfinders (falls zutreffend): Sergius LANG	Full name of second joint inventor, if any: Sergius LANG
Unterschrift des Erfinders: Sergius LANG Datum: Oct. 5th 2001	Second inventor's signature: Sergius LANG Date: Oct. 5th 2001
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Staatsangehörigkeit: Österreich	Citizenship: Austria
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(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors)